UNITED STATES PATENT OFFICE.

MICHAEL F. WEIDENBACH AND FRANK B. PETERS, OF MINNEAPOLIS, MINNESOTA, ASSIGNORS TO MANUEL-SMITH HEATING COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA. COMBINED HEATING AND VENTILATING SYSTEM.

931,524.


Application filed September 18, 1907. Serial No. 983,525.

To all whom it may concern:

Be it known that we, MICHAEL F. WEIDENBACH and FRANK B. PETERS, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Combined Heating and Ventilating Systems; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to combined heating and ventilating systems, and has for its especial object to improve that type of heating and ventilating system wherein a ventilating flue is extended from the lower portion of the room into the chimney and is connected to or connected with a smoke pipe or flue of a stove or furnace.

To the above ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claim.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views. Referring to the drawings, Figure 1 is a view principally in side elevation, but with some parts broken away, and with some parts in vertical section, illustrating our invention applied in connection with an air jacketed stove, such as usually employed in school-rooms and stores; and Fig. 2 is a plan view of the apparatus shown in Fig. 1.

The stove or heater 1, which may be of any suitable design, is, as already indicated, inclosed within a surrounding jacket 2 that is open at its top and bottom, although so far as the principal feature of our invention is concerned, this arrangement of stove and jacket is immaterial.

The numeral 3 indicates the chimney or main flue, which may be of any suitable construction.

The numeral 4 indicates a ventilating flue or cold air pipe, the lower end of which extends upward from the vicinity of the floor of the room in which the heating apparatus is installed, and at its upper end is turned horizontally and extended into the main draft flue 5. The horizontally extended portion of this ventilating flue is made up of a relatively large section 5 and a contracted section 6, which sections are preferably joined by a conical portion 7. The contracted section 6 is preferably of approximately the same diameter as the vertically extended body portion of the flue 4, while the section 5 is considerably larger.

The smoke pipe 9, which as shown, leads from the top of the stove 1, extends upward and is then extended horizontally in axial line through the flue sections 5 and 6, and is extended through the upper end elbow portion of the ventilating flue 4, axially through the enlarged section 5 thereof, and terminates approximately at a point where the two sections 5 and 6 are joined by the conical section 7.

In actual practice we have obtained highly satisfactory results by employing a smoke pipe 9 of six inches in diameter with a flue 4 of twelve inches in diameter, and with flue sections 5 and 6, respectively, sixteen and twelve inches in diameter. These dimensions give an annular air space in the flue section 5 around the inwardly projecting end of the smoke pipe 9, the conducting capacity of which is approximately equal to that of the depending portion of the said flue 4. It is of the greatest importance that the end of the smoke pipe 5 extend approximately throughout the enlarged horizontal section 5 of the ventilating flue or cold air pipe, so that air which is drawn upward from the vicinity of the floor will come into contact with the hot smoke pipe 9 and be heated before it is commingled with the products of combustion discharged into the contracted portion 6 from said smoke pipe.

This results in an intensified draft both through the smoke pipe 9 and through the ventilating flue 4. It is also important that portion of the flue 4 which enters the chimney or main draft flue 5 be of less cross section than the enlarged section 5, so that a strong draft and a rapid movement of the air and products of combustion is caused to take place in said section 6. This construction of the said flue section 6 without choking the stove draft to an undesirable extent, nevertheless serves to hold back hot products of combustion, so that great economy in the use of fuel is obtained.

In the drawings we have shown an air...
heating chamber 10 applied to one side of the stove 1. This heating chamber 10 is open at its top and its lower end is connected to a cold air inlet pipe 11 that extends outward through one of the walls 12 of the room or building. Fresh air from outside of the building is thus drawn into the room, and, being heated in the compartment 10, is discharged through the top thereof and through the upper end of the casing or jacket 2. Thus it will be seen that fresh air will be continuously drawn into the room, heated and then discharged toward the top of the room, while the cold and foul air will be drawn off from the room from a point near the floor through the ventilating pipe 4.

The fresh air supply device above described is subject matter of a companion application filed by us of date December 23, 1907, S. N. 497,872, entitled combined heating and ventilating systems.

The term "stove" is herein used in a broad sense to include a furnace or any other kind of a fuel burning heater.

What we claim is:

In a heating and ventilating apparatus, the combination with a main flue or chimney, of an upwardly extended ventilating flue having an approximately horizontal upper end portion made up of an enlarged section and a contracted section, the said contracted section having approximately the same cross section as the vertically extended body portion of said ventilating flue, and a stove or heater having a smoke pipe extending axially through the enlarged upper section of said ventilating flue but terminating outward of the contracted section thereof, so that said smoke pipe does not decrease the conducting capacity of said contracted portion of the horizontal upper end of said ventilating flue, and the enlarged horizontal upper end portion of said ventilating flue being of such diameter that the annular space within the same surrounding said smoke pipe is equal in area to the area of the cross section of the vertical body portion of said flue, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

MICHAEL F. WEIDENBACH.
FRANK B. PETERS.

Witnesses:
H. D. KILGORE,
F. D. MERCHANT.